Name _____ Class_____Date_____

Skills Worksheet

Chapter Review

USING KEY TERMS

Complete each of the following sentences by choosing the correct term from the word bank.

free fall	projectile motion	inertia
terminal velocity	momentum	

1. An object in motion has_____, so it tends to stay in motion.
2. An object is falling at its_____ if it falls at a constant velocity.
3. _____ is the path that a thrown object follows.
4. _____ is a property of moving objects that depends on mass and velocity.
5. _____ occurs only when air resistance does not affect the motion of a falling object.

UNDERSTANDING KEY IDEAS

Multiple Choice

_____ 6. When a soccer ball is kicked, the action and reaction forces do not cancel each other out because
   a. the forces are not equal in size.
   b. the forces act on different objects.
   c. the forces act at different times.
   d. All of the above

_____ 7. An object is in projectile motion if it
   a. is thrown with a horizontal push.
   b. is accelerated downward by gravity.
   c. does not accelerate horizontally.
   d. All of the above

_____ 8. Newton's first law of motion applies to
   a. moving objects.
   b. objects that are not moving.
   c. objects that are accelerating.
   d. Both (a) and (b)

_____ 9. To accelerate two objects at the same rate, the force used to push the object that has more mass should be
   a. smaller than the force used to push the object that has less mass.
   b. larger than the force used to push the object that has less mass.
   c. the same as the force used to push the object that has less mass.
   d. equal to the object's weight.

_____ 10. A golf ball and a bowling ball are moving at the same velocity. Which of the two has more momentum?
   a. The golf ball has more momentum because it has less mass.
   b. The bowling ball has more momentum because it has more mass.
   c. They have the same momentum because they have the same velocity.
   d. There is not enough information to determine the answer.

Short Answer

11. Give an example of an object that is in free fall.

_____

_____

12. Describe how gravity and air resistance are related to an object's terminal velocity.

_____

_____

13. Why can friction make observing Newton's first law of motion difficult?

_____

_____

Math Skills

14. A 12 kg rock falls from rest off a cliff and hits the ground in 1.5 s.
   a. Without considering air resistance, what is the rock's velocity just before it hits the ground? Show your work below.

   b. What is the rock's momentum just before it hits the ground? Show your work below

CRITICAL THINKING

15. **Concept Mapping** Use the following terms to create a concept map: *gravity, free fall, terminal velocity, projectile motion,* and *air resistance.*

16. **Identifying Relationships** During a space shuttle launch, about 830,000 kg of fuel is burned in 8 min. The fuel provides the shuttle with a constant thrust, or forward force. How does Newton's second law of motion explain why the shuttle's acceleration increases as the fuel is burned?

_____

_____

_____

_____

17. **Analyzing Processes** When using a hammer to drive a nail into wood, you have to swing the hammer through the air with a certain velocity. Because the hammer has both mass and velocity, it has momentum. Describe what happens to the hammer's momentum after the hammer hits the nail.

_____

_____

_____

_____

18. **Applying Concepts** Suppose you are standing on a skateboard or on in-line skates and you toss a backpack full of heavy books toward your friend. What do you think will happen to you? Explain your answer in terms of Newton's third law of motion.

_____

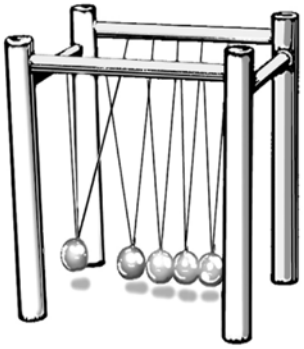
_____

_____

_____

INTERPRETING GRAPHICS

19. The picture below shows a common desk toy. If you pull one ball up and release it, it hits the balls at the bottom and comes to a stop. In the same instant, the ball on the other side swings up and repeats the cycle. How does conservation of momentum explain how this toy works?



_____

_____

_____